DEGTYAREVA, A.

Agriculture

Collective farm management is for greater efficiency. Kolkh. proizv. 12 No. 2, 1952

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

KOLESNIK, N.A. [Kolesnyk, N.A.]; FRIDMAN, O.A.; BRODSKAYA, Z.M. [Brods'ka, Z.M.]; DEGTYAREVA, A.A. [Dehtiar'ova, A.A.]

Resistance of various plastics to aggressive media. Khim.prom. [Ukr.] no.2:11-14 Ap-Je '65. (MIRA 18:6)

KONIKOV, A.S.; PLATONOVA-CHERNYSHEVA, L.V.; DEGTYAREVA, A.N.; LYZHINA, G.M.

Study of physiologically active substances in animal and plant tissues. Report No.6. Uch. zap. Kras. gos. ped. inst. 15:195-200 '59. (MIRA 14:12)

(Tissue extracts) (Respiration)

DEGTYAREVA, A. F.

20766. Kondratskiy, A. P. i Degtyareva, A. F. Nekotoryye fizicheskiye svoystva efirnykh masel i efirnomaslichnogo svr'ya. Trudy Krasnodarsk. in-ta pishch. promsti, vyp. 4, 1948, s. 3-14. Bibliog. 7 nazv.

SO: LETOPIS ZHURNAL STATEY - Vol. 23, Moskva, 1949.

DEGTYAREVA, A. P.

21841 FAL'KOVICH, Yu. Ye. i DEGTYAREVA, A. P.

Ochistka etilovogo spirta--rektifikata ot primesey.
Trudy Krasnodarsk, in - ta pishch. prom - sti, Vyp. 6, 1949, s. 189-91.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949

USSR
CATEGORY : Cultivated Plants. Medicinal. Essential Oil. M
Toxic.
ABS. JOUR. : RZhBiol., No. 3, 1959, No. 11170

AUTHOR : Voloshin, M. P., Dagtyarova, A. P.
INST. : Nikitsk State Botanical Garden.
TITLE : Some Data on the Biochemical Characteristics of Bay Tree.

ORIG. PUB. : Byul. nauchno-tekhn. inform. gos. Nikitsk. botan. sad, 1957, No. 3-4, 60-63
ABSTRACT : Fourteen forms of bay tree growing in Nikitsk Botanical Garden were studied for the determination of the essential oil content. Leaves from the middle part of the crowns of the plants aged 15 years were taken for the analysis. The determination of the essential oil content was done in the leaves of three periods of collecting: spring, summer and winter. In many forms, the highest content of essential oils has been observed in the summer and winter periods, and the lowest - in the spring period. The yield of essential oils from the leaves of the

CARD: 1/2

COUNTRY :
CATEGORY :

ABS. JOUR. : RZhBiol., No. 1959, No. 11170

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : plants growing on sunny, well taken care of plots is higher than on neglected or shaded plots. The gathering of the leaves should be done late in autumn or in winter when the growth of the above-ground part of the plant will have completely ceased. -- M N. Treskina

CARD: 2/2

USSR / Cultivated Plants. Medicinal, Essential Oil Bearing, Toxic. M-8

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 58792

Author : Degtyareva, A. P.
Inst : State Nikitskiy Botanical Garden
Title : Antibiotic Properties of Common Myrtle (Myrtus Communis L.)

Orig Pub : Byul. nauchno-tekhn. inform. Gos. Nikitsk. botan. sad., 1957, No 3-4, 64-68

Abstract : The method of testing antibiotic activity is given. The active agent is present mainly in leaves of various forms of myrtle, growing in the Nikitskiy botanical garden. It is not resistant to increased temperature; it is not volatile with water vapor. It is least soluble in water. It has better solubility in an aqueous alkaline solution; it is most soluble in petroleum ether. A deposit of this agent can be

Card 1/2

extracted out of aqueous alkaline solutions by means of mineral acids and carbon dioxide. The method of isolation of the active substance is given. A crystalline preparation of the active agent was tested with regard to golden staphylococcus, microbacterium B and showed considerable activity. According to the data supplied by the Institute im. Sechenov in the city of Yalta, the action of this preparation on the tubercle bacilli is approximately equal to that of streptomycin. A further study of the antibiotic and physico-chemical properties of phytoncides of myrtle is recommended. -- M. N. Treskina

DEGTYAREVA, A.P. [Dehtiar'ova, A.P.]; POCHINOK, V.Ya. [Pochynok, V.IA.]

Physical, chemical and antibacterial properties of substances isolated from the leaves of the myrtle (Myrtus communis L.) and eucalyptus (E. laevopinea R.T.Bak and E.Wilkinsoniana R.T.Bak). Farmatsev. zhur. 15 no.6:47-52 '60. (MIRA 14:11)

1. Laboratoriya fiziologii i biokhimii rasteniy Gosudarstvennogo Nikitskogo botanicheskogo sada i kafedra mikrobiologii Kiyevskogo meditsinskogo instituta.
(EUCALYPTUS) (MYRTLE) (MATERIA MEDICA, VEGETABLE)

NEKLYUDOV, M.K., kand. tekhn. nauk; SVIRSKIY, V.A., inzh.; DEGTYAREVA, A.P., inzh., red.; ZVORYKINA, L.N., red.izd-va; KASIMOV, D.Ya., tekhn. red.

[Operation and maintenance of motor rollers] Rabota na motornykh katkakh. Pod red. A.P.Degtiareva. Moskva, Gos. izd-vo litry po stroit., arkhit. i stroit. materialam, 1961. 86 p. (MIRA 15:2)

1. Ukraine. Ministerstvo stroitel'stva. Tekhnicheskoye upravleniye. (Road rollers)

APLYAK, I.V.; DEGTYAREVA, A.P. [Dehtiar'ova, H.P.]

Study of the antimicrobic effect of substances, isolated from myrtle, on the microflora of canned food. Mikrobiol. zhur. 25 no.6:19-23 '63 (MIRA 17:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut konservnoy promyshlennosti i Nikitskiy botanicheskiy sad.

DEG-TYAREVA, A.S.

USSR / General and Special Zoology. Insects. P

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16471

Author : Degtyareva A.S., Sanin V.A., Granin E.F.
Inst : Not given
Title : The Effectiveness of New Chlororganic Insecticides in the Control of the Beet Weevil.
(Effectivnost' novykh khlororganicheskikh insekticidov v bor'be so sveklovichnym dolgonosikom.)

Orig Pub: Nauchn. tr. In-ta entomol. i fitopatol. AN UkSSR, 1956,7,5-20.

Abstract: Laboratory, small-plot experiments, and production studies demonstrated that chlorothane, chlorothane with DDT, chlorindane, and chlorophene were practically equal in effectiveness when sprayed on the young beet sprouts; they brought about death of the weevil beetles (80 - 100%) in eight days.

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USSR / General and Special Zoology. Insects. P

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16471

Abstract: tration of the preparation in an outlay of 400 litres to the hectare was recommended for surface use.

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DEGTYAREVA A.S

USSR / General and Special Zoology. Insects. P

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16469

Author : Degtyareva A.S., Meisakhevich Ya.A.
Inst : Institute of Entomology and Phytopathology Academy of Sciences Ukrainian Soviet Socialist Republic.
Title : The Use of Concentrated Emulsions of Insecticides in the Control of the Beet Weevil. (Primeneniye kontsent rirovannykh emul'sii insecticidov dlya bor'by so sveklovichnym dolgonosikom).

Orig Pub: Nauchn. tr. In-ta entomol. i fitopatol. AN UkSSR 1956, 7, 36-45.

Abstract: Economical nozzles with discharging apertures of 1 mm diameter at a liquid pressure of five atm secured an outlay of 135 litres per hectare; with apertures of 0.75 mm they secured an outlay

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USSR / General and Special Zoology. Insects. P

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16469

Abstract: of only 80 litres per hectare. The use of a 9% solution of barium chloride in 135 litres per hectare was recommended. Spraying experiments were carried out from 13 May to 7 July 1955 with the sprayer ONK hung on the tractor XTZ-7 at an outlay of 400 litres per hectare, 270 litres per hectare, and 135 litres per hectare of mineral oil emulsions of DDT (1.5-4.5%) chlorothane with DDT (0.4-1.2%), and chlorphene (0.4% and 1.2%). The death rate of the weevil was practically alike in different versions of this experiment. Chlorothane with DDT was most effective, while chlorophene was especially effective. A photographic print of the 135 litres per hectare spray done with economical nozzles showed a dense and uniform coating with small drops. The use of emulsions of DDT (1.2 kg per hectare), chlorothane with DDT

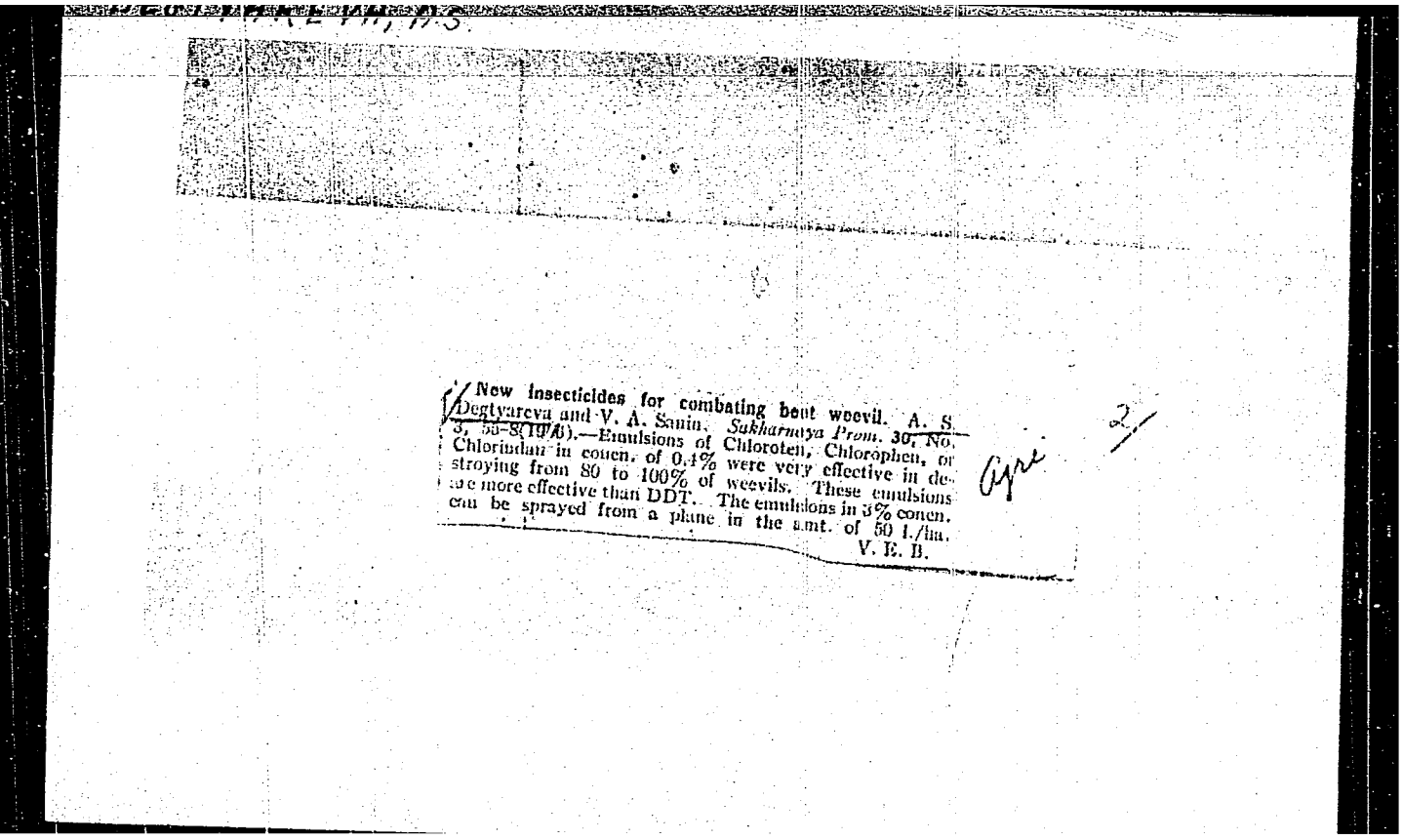
Card 2/3

USSR / General and Special Zoology. Insects. P

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16469

Abstract: (1 kg per hectare), and chlorophene (1 kg per hectare) at an outlay of 135 litres per hectare was recommended.

Card 3/3



New insecticides for combating beet weevil. A. S. Degtyareva and V. A. Sanin. *Sakharnaya Prom.* 30, No. 3, 58–8(1956).—Emulsions of Chloroten, Chlorophen, or Chlordan in concn. of 0.4% were very effective in destroying from 80 to 100% of weevils. These emulsions are more effective than DDT. The emulsions in 3% concn. can be sprayed from a plane in the amt. of 50 l./ha.
V. E. B.

DEGTYAREVA, A.S., Cand Agr Sci -- (diss) "Effectiveness of chlorinated terpenes in the control of [redacted] beet curculionida ." Khar'kov, 1958, 16 pp (Min of Agr USSR. Khar'kov Order of Labor Red Banner Agr Inst im V.V. Dokuchayev) 100 copies. List of author's works at end of text (14 titles) (KL, 29-58, 134)

DEGTYAREVA, A.S.; MEYSAKHOVICH, Ya.A.; MINASYAN, G.D.; CHIZH, M.A.; SHELESTOVA, V.S.

Using the OPV sprayer in low-volume spraying of orchards. Zashch. rast. ot vred. i bol. 6 no.7:20-22 Jl '61. (MIRA 16:5)
(Spraying and dusting in agriculture)

DEGTYAREVA, A.S., kand.biolog.nauk; SHELESTOVA, V.S., assistent

Using chlorophos in orchards. Zashch. rast. ot vred. i bol. 8 no.7: 25 Jl '63. (MIRA 16:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut zashchity rasteniy (for Degtyareva). 2. Kafedra entomologii Ukrainskogo nauchno-issledovatel'skogo instituta zashchity rasteniy (for Shelestova).

DEGTYAREVA, A.S.; MEYSAKHOVICH, Ya.A.

Blower-type sprayer in young nurseries. Zashch. rast. ot vred. i bol. 8 no.10:29-30 O '63. (MIRA 17:6)

1. Ukrainskiy nauchno-issledovatel'skiy institut zashchity rasteniy i Vsesoyuznyy institut zashchity rasteniy.

KIVI, K.A., aspirant; DEGTYAREVA, A.S., kand.biolog.nauk; SHELESTOVA, V.S.

Brief information. Zashch. rast. ot vred. i bol. 8 no.12:46-47 D '63. (MIRA 17:3)

1. Estonskaya sel'skokhozyaystvennaya akademiya, Tartu (for Kivi). 2. Ukrainskiy institut zashchity rasteniy i Ukrainskaya sel'skokhozyaystvennaya akademiya (for Degtyareva, Shelestova).

DEGTYAR'OVA, A.S. [Dehtiar'ova, A.S.]; SHELESTOVA, V.S.

New insecticides for the control of the apple codling moth. Khim. prom. [Ukr.] no.1:44-46 Ja-Mr '64. (MIRA 17:3)

DEGTYAREVA, E. V.

"Investigating the Refractory Properties of Quartz Glass." Cand Tech Sci, Khar'kov Polytechnic Inst, Khar'kov, 1953. (RZhKhim, No 7, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

Crystallization of quartz glass. I. S. Kaĭnarskiĭ and E. V. Degtyareva. *Doklady Akad. Nauk S.S.S.R.*, 91 [2] 380-3 (1953).—Crystallization of quartz glass was studied under the influence of cations of the metals Li, Na, K, Cu, Ag, Be, Mg, Ca, Zn, Sr, Cd, Ba, Hg, Al, Ti, Zr, P, V, Sb, Bi, Cr, Mn, Fe, Co, and Ni and the anions BO_3^{3-}, PO_4^{3-}, VO_3^-, SO_4^{2-}, and WO_4^{2-}. The cations were added as oxides, carbonates, or other salts with a volatile anion, and the anions with a volatile cation. The addition amounted to 1.5% by weight (calculated as oxide). All additions can be divided into three groups: (1) those which favor tridymitization (Li_2O, Na_2O, and K_2O); (2) those that do not change crystallization into cristobalite within the temperature range of tridymite stability, including most cations and all anions used; and (3) those that decrease the intensity of crystallization into cristobalite, which are Al_2O_3, MnO, and FeO.

B.Z.K.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov.
2. Akademiya nauk SSSR (for Belyankin).

Degtyareva, E. V.

USSR/Chemistry - Chemical technology

Card 1/1 Pub. 22 - 31/40

Authors : Kaynarskiy, I. S., and Degtyareva, E. V.

Title : Effect of mineralizers during tridymitization of silica and criteria for the evaluation of the mineralizers

Periodical : Dok. AN SSSR 99/2, 301-304, Nov 11, 1954

Abstract : The effect of mineralizers, during the conversion of SiO_2 into tridymite (crystalline form of silica), was investigated. It was found that the mineralizer (Na_2O) not only affects the kinetics of the conversion, but is instrumental in the conversion itself. Ways of obtaining a high degree of tridymitization of silica are described. Temperature increases intensify the process of conversion mainly as result of acceleration of the diffusion processes. Eighteen references: 2-USA and 16—USSR (1913-1954). Tables.

Institution : All-Union Scientific Research Institute of Refractories, Kharkov

Presented by: Academician N. V. Byelov, August 2, 1954

DEGTYAREVA, E. V.

3

Characteristics of refractories from tridymitizing quartz glass. E. V. Degtyareva. *Ogneupory*, 20 [2] 82-85 (1955).—A comparison was made of quartz glass which tridymitizes with that which cristobalizes. Tridymitization of glass with the addition of 1 to 1.5% Na_2O does not result in loosening (the strength even increases); cristobalization of glass decreases its strength one third. The slag resistance of tridymitized glass at 1600°C. was much greater than that of cristobalized glass. With the addition of 1% Na_2O, refractoriness and deformation temperature under load dropped only 20°. B.Z.K.

1

RM

DEGTYAREVA, E.V.

137-1958-3-4585

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 3, p 17 (USSR)

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V.

TITLE: The Investigation and Improvement of the Properties of Light-weight Dinas Brick (Issledovaniye i uluchsheniye svoystv legkovesnogo dinasa)

PERIODICAL: Byull. nauchno-tekhn. inform. Vses. n.-i. in-t ogneuporov, 1957, Vol 2, pp 53-72

ABSTRACT: An investigation of changes in properties of light-weight dinas (LD), manufactured from Ovruch quartzite (with grains not exceeding 1 mm) and ground coke dust (with grains not exceeding 3 mm) with the composition of the charge, changes in the grain-size composition of quartzite and coke dust, and changes in the composition of the mineralizers CaO+ FeO). It is established that increasing the coke-dust content in the charge, increasing the size of the fine fraction of quartzite from a grade < 0.06 mm to a grade < 0.088 mm, and utilizing CaO in the binder material (without introducing FeO), produces an increase in the porosity of the LD and reduces its volumetric weight. The research yielded an experimental LD of a volumetric weight of 1.28 - 1.36

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The Investigation and Improvement of the Properties (cont.)

g/cm^3 a specific gravity of 2.35 - 2.36 kg/cm^2, a $\sigma_{b\,compr.}$ of 150-192 kg/cm^2 and a coefficient of thermal conductivity equal to 0.53 - 0.75 kcal/m·degree·hr (at an average temperature of 300°). The shear modulus of the LD, at temperatures below 1000°, may be reduced, while its heat resistance may be raised by means of increasing the coke-dust content, reducing the size of its grains, and employing additives which are devoid of Fe oxides. The Dzerzhinskiy dinas plant produced an experimental series of hollow LD (with sealed circular openings) with a 17 percent cavity. Volumetric weight of this hollow LD is 0.99 g/cm^3, i.e., it is 20 percent lower than that of the solid LD. The hollow LD may be effectively employed for periods >16 months in the lining of gas-fired chambers of furnaces used in the sintering of dinas.

S. G.

Card 2/2

SOV/137-59-1-53

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 7 (USSR)

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V.

TITLE: New Types of Silica and Carborundum Refractories (Novyye tipy dinasovykh i karborundovykh ogneuporov)

PERIODICAL: V sb.: Materialy soveshchaniya po vopr. raboty pechey tsvetn. metallurgii i razvitiya pirometallurg. protsessov. Moscow, 1957, pp 463-476

ABSTRACT: A description is made of the properties of silica brick (S) and factors affecting its stability. To increase the stability of S VNIIO (All-Union Scientific Research Institute of Refractories) has developed a high-density, high-silica S (its physicochemical properties are adduced) containing 2 - 3.5% more silica, which fact increases its resistance to chemical attack; it has 50% less porosity which decreases its capacity for absorbing the melt. Its maximum safe temperature is 20 - 30°C higher than that of the common S brick. The character and properties of light-weight refractories are adduced, including those of light-weight S manufactured by the method of burned-out additives. A description is given of light-weight S developed at the

SOV/137-59-1-53

New Types of Silica and Carborundum Refractories

VNIIO with mechanical strength of 100 kg/cm^2 and volumetric weight of 1.3 - 1.35 g/cm^3, also of hollow light-weight S. Their range of applicability is given. Properties of carborundum refractories and the effect of various factors thereon are adduced. With a view of improving the quality of carborundum refractories, VNIIO developed a new superhigh-grade type of dense carborundum refractory, manufactured of 100% industrial carborundum without mineral additives, by either the plastic or the semi-dry method. Findings of investigations of the oxidizability of carborundum refractories are described.

Yu. O.

Card 2/2

L 23808-66 EWP(e)/EWT(m) WH

ACC NR: AP6007246 SOURCE CODE: UR/0363/66/002/002/0239/0244

27
B

AUTHOR: Degtyareva, E.V.; Kaynarskiy, I.S.

ORG: Ukrainian Scientific Research Institute for Refractories (Ukrainskiy nauchno-issledovatel'skiy institut ogneporov)

TITLE: Kinetics of corundum[15] sintering[6] under pressure

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 2, 1966, 239-244

TOPIC TAGS: corundum, sintered aluminum powder, ~~chemical kinetics~~ sintering

ABSTRACT: A study was made of the kinetics of shrinkage in the sintering of corundum under pressure, with modifying additives and with the addition of 0.2 weight % of magnesium oxide. The corundum was prepared by calcining alumina at 1550°C for 6 hours. The material was ground to a size of about 3 microns, washed with hydrochloric acid, and then by decantation six times with distilled water. The aluminum oxide content in the initial corundum was from 99.75 to 99.85 weight %. The shrinkage was measured with a dilatometer with a reading accuracy of 5 microns. The temperature was measured with platinum-platinum rhodium thermocouples. It was found that the application of pressure increases the shrinkage of the corundum samples in sintering, independent of the presence of a

UDC: 553.65:536.421.5

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L 23808-66

ACC NR: AP6007246

modifying additive. Results are exhibited graphically. An increase in the applied pressure, without changing the shrinkage proportionally, sharply increases the sintering rate. As a function of the applied pressure, the coefficient expressing the shrinking rate in the initial period of isothermal sintering has an exponential character with respect to a non-equilibrium system. Preliminary calcining of the samples, carried out with gradual heating, changes the dependence of the shrinkage coefficient on the applied pressure. A decrease in the heating rate of the corundum samples to the temperature of their isothermal sintering, bringing the system to an equilibrium state, aids in lowering the rate of isothermal shrinkage. Orig. art. has: 6 figures.

SUB CODE: 11,13/ SUBM DATE: 10Jul65/ ORIG REF: 022/ OTH REF: 002

Card 2/2

AUTHOR: Degtyareva, E. V. 131-58-6-9/14

TITLE: Interaction and Limit Temperatures of the Contact Between Light Dinas and Refractory Industrial Products (Vzaimodeystviye i predel'nyye temperatury kontakta legkovesnogo dinasa s promyshlennymi ogneuporami)

PERIODICAL: Ogneupory, 1958, Nr 6, pp. 274-282 (USSR)

ABSTRACT: The present investigation was carried out with cylinders of refractory materials of a diameter and a hight of 30 mm. The chemical compositions of the investigated refractory materials are mentioned in table 1. The samples of various refractory materials are put on top of the cylinders of the light dinas without any further load. The investigation was carried out in a Kryptol furnace (kriptolovaya pech') with rising temperature in the course of 2 - 3 hours and a maintainance of the final temperature for 5 hours. As a result of the interaction of the light dinas with various refractory materials a certain amount of melt was formed on the surface of contact at the corresponding melting temperatures of the eutectic mixtures as well as at higher

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temperatures. On the action of the force of gravity and of the capillary absorption this melt soaks the lower as well as the upper dinas sample. Furthermore the interaction of the light dinas with various samples of other refractory materials is described in detail. The destruction of the light dinas takes place the more intensively the more melt is produced, i. e. the higher the clay content in the aluminum-silicate sample is. In figure 1 the samples of the aluminum-silicate refractory materials and of the light dinas are shown according to their interaction at 1500°C. The greatest destruction takes place with the light dinas at an interaction with samples of high clay content at 1600°C (figure 2). The least interaction with light dinas was observed with foam chamotte (penoshamot) and semiacid samples at 1500 - 1600°C. In figure 3 the spherulitic new formations forming on the interaction of foam chamotte with light dinas are shown. The interactions between light dinas and kaolin samples at 1500°C is greater

than that with foam chamotte and semiacid samples. In figure 4 the crystallization of mullite from the melt in the interaction of light dinas with samples of high clay content at 1600°C is shown. No interaction takes place with refractory magnesite-chromite and chromium--magnesite materials and light dinas at 1500 and 1600°C (figures 5 and 6) the same is the case between light dinas and magnesite at 1450°C; at 1500°C, however, this interaction takes an intensive course (figure 5). In figure 7 the crystallization is shown which formed by the interaction between light dinas and magnesite at 1500°C . No interaction takes place between light dinas and forsterite at 1500°C; at 1600°C, however, a very intensive one is observed (figure 6). In table 2 the admissible temperatures of the direct contact between light dinas and refractory industrial products are shown. There are 8 figures, 2 tables, and 11 references, 5 of which are Soviet.

Interaction and Limit Temperatures of the Contact Between Light Dinas and Refractory Industrial Products 131-58-6-9/14

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov (All-Union Scientific Research Institute for Refractories)

1. Refractory materials--Analysis 2. Furnaces--Performance 3. Refractory materials--Temperature factors 4. Refractory materials --Test results

Card 4/4

15 (2)

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V. SOV/131-59-9-6/12

TITLE: Practical Use and Wear of Refractory Carborundum Products

PERIODICAL: Ogneupory, 1959, Nr 9, pp 411-419 (USSR)

ABSTRACT: In this paper the authors report on the use of refractory carborundum products in various furnaces. The muffles in the furnaces for the burning of enameled utensils are composed of 28 plates with the following dimensions: 65×72×4.1 cm. There follows a detailed description of their utilization conditions and their modifications during use. Table 1 gives their content of silicon carbide, as well as the properties of the plates before and after their use in fusing the enamel. The furnaces for the regeneration of the skin are provided with muffles having a pusher. The muffles are heated by burners for blast furnace- or natural gas. Table 2 shows the composition of the gas. Figures 1 and 2 show carborundum muffles after 15-30 working days. Table 3 shows the chemical analyses, the porosity, and the specific weight of the muffles before and after use. For the platinumrhodium-platinum thermocouples protecting carborundum coatings are used. Table 4 contains the description of the carborundum tubes after their use. The investigations showed

Card 1/2

that the chief modification of the refractory carborundum products consists in the oxidation of silicon carbide according to the reaction $2\ SiC + 3\ O_2 = 2\ SiO_2 + 2\ CO$. This oxidation process causes a doubling of the carborundum volume, as may be seen from figure 3. In conclusion it is said that the refractory carborundum products are chiefly oxidized by gases with high steam content. This oxidation causes a considerable expansion of the carborundum products and thus a strong increase of the volume. This leads to the formation of cracks and the destruction of the walls. Hence, when erecting the walls joints of appropriate dimensions should be provided. There are 5 figures, 4 tables, and 7 references, 3 of which are Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute for Refractories)

15 (2)

S/131/60/000/02/007/014
B015/B008

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V.

TITLE: Oxidizability of Refractory Carborundum Products and Methods for Its Reduction

PERIODICAL: Ogneupory, 1960, Nr 2, pp 77-84 (USSR)

ABSTRACT: The authors investigated the possibility of reducing the oxidizability of refractory carborundum products. The samples produced for this purpose were oxidized in a Kryptol furnace (Fig 1). The dependence of the degree of oxidation on the grain of the carborundum masses, the permeability to gas and the porosity of the products can be seen from figures 2-6 and tables 1-5. The clay content in carborundum products reduces their stability, as shown in table 6 and figures 7 and 8. An additive of 10% ferrosilicon or 3% $Ba(OH)_2$ reduces the oxidizability of carborundum (Table 7), the ceramic properties of the products are not altered thereby (Table 8). The influence of the saturation of carborundum samples by solutions of aluminum-, magnesium-, calcium- and alkali phosphates can be seen from figure 9 and table 9. The oxidation of carborundum bricks without an additive, with an additive of 10% Fe, 3%

Card 1/2

$Ba(OH)_2$, and, on saturation by phosphates under direct flame action is mentioned in tables 10 and 11. It is stated in conclusion that the oxidizability of carborundum products is reduced with the reduction of the porosity and permeability to gas. By improving the grain of refractory carborundum products without mineral additives, the oxidizability is reduced at high temperatures and increased at relatively low ones. An additive of 10% ferrosilicon and 3% barium hydroxide reduces the oxidizability of the products. An additive of clay furthers the reduction of the oxidation of carborundum products at temperatures of up to 1250-1350° and the increase of their oxidizability at 1450-1600°. By impregnating burnt refractory carborundum products with solutions of silicon ethyl ester and phosphates, the oxidizability of the products is reduced. Carborundum products are preserved against oxidation by coating with an alumina-containing vanadium alloy. There are 10 figures, 11 tables, and 14 references, 5 of which are Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories)

~~65993~~ 69593

S/131/60/000/04/06/015
B015/B008

15.2220

AUTHORS: Kaynarskiy, I.S., Degtyareva, E.V., Kukhtenko, V.A.

TITLE: Carborundum Products With Silicon Nitride Bond

PERIODICAL: Ogneupory, 1960, No. 4, pp. 175-180

TEXT: The properties of these carborundum products are investigated and described by the authors in the paper under review. Silicon-nitride (Si_3N_4) melts at 1900° and may be used as refractory material. Its strength scarcely changes in the temperature range of from 20 - 1200°. A number of patents has been granted lately for the use of silicon-nitride as bond for the manufacture of high-quality carborundum refractories. The charge composition and the properties of the carborundum samples with silicon-nitride bond are mentioned in table 1. In the course of the determination of refractoriness, the pyroscope of metallic silicon was deformed at a temperature of 1680° and that of a sample of 100% technical silicon, previously nitrated at 1500°, at over 1900° (Fig. 1). The properties of the samples are compared in table 2. The influence of the carborundum granulation and of the amount of silicon on the ceramic properties of the samples may be seen from table 3. The thermal expansion of the carborundum

Card 1/2

69593

Carborundum Products With Silicon Nitride Bond

S/131/60/000/04/06/015
B015/B00F

samples with silicon-nitride bond is shown in Fig. 2. The oxidizability of the carborundum samples in air at 1600° is mentioned in table 4. The authors state in conclusion that, as a result of the investigations, the manufacturing technique of high-quality carborundum refractories with silicon-nitride bond was worked out, its advantage consisting in its constancy against influences of acid and slag. There are 2 figures, 4 tables, and 20 references, 4 of which are Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories)

Card 2/2

87133

S/131/60/000/012/003/003
B021/B058

18.6100

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V., and Kukhtenko, V. A.

TITLE: Hot-pressed Ultradense Products of Carborundum

PERIODICAL: Ogneupory, 1960, No. 12, pp. 562-566

TEXT: The authors carried out hot-pressing on an installation designed by the Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR). Experiments showed that an addition of 20% boron results in a considerable increase of density (Table 1) when pressing the carborundum at 2200°C. The porosity is still high at a pressure of 100 kg/cm^2 and a temperature of 2000°C (Table 2). Reducing the pressure below 100 kg/cm^2 leads to an increase in porosity (Table 3). The compression of the samples continues during temperature increase under pressure (Table 4). A reduction of the boron addition to 10% scarcely alters the density of the samples (Table 5). The influence of the introduction of large carborundum granules on the density of hot-pressed samples at a pressure of 100 kg/cm^2, a temperature of 2140° - 2170°C, and a duration of 5 min is illustrated in Table 6. The properties

Card 1/2

Hot-pressed Ultradense Products of Carborundum

S/131/60/000/01/003/003
B021/B058

of hot-pressed carborundum samples with a boron admixture pressed at a pressure of 100 kg/cm^2, a temperature of 2140-2170°C, and a duration of 5-7 min are listed in Table 7. Studies showed that ultrahigh carborundum samples, i.e., with 96 to 98% of the theoretical density may be manufactured through hot-pressing at 2140-2170°C, a pressure of 100 kg/cm^2, and a slight boron admixture. The compression of the carborundum samples through hot-pressing and boron addition could be increased by the formation of a eutectic melt in the system B_4C - SiC An addition of finely ground graphite together with boron for the purpose of producing B_4C failed as the porosity increased by 1.5-2 times. There are 7 tables and 9 references: 5 Soviet, 2 US, and 1 German.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractory Materials)

KAYNARSKIY, I.S.; DEYTYAREVA, K.V.

Oxidizability of carborundum refractories and methods for lowering it. Ogneupory 25 no.2:77-84 '60. (MIRA 13:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Carborundum) (Refractory materials)

S/081/61/000/002/009/023
A005/A105

Translation from: Referativnyy zhurnal, Khimiya, 1961, No. 2, p. 333, # 2K231

AUTHORS: Kaynarskiy, N.S., Degtyareva, E.V.

TITLE: Dinas Carborundum and Its Properties

PERIODICAL: "Sb. nauchn. tr. Ukr. n.-i. in-t ogneuporov", 1960, No. 3(50), pp. 185 - 201

TEXT: The authors give results from an investigation of technology and properties of Dinas Carborundum which is distinct from the ordinary Dinas by high thermal stability. A peculiarity of Dinas Carborundum technology is the application of 30% milled carborundum to the composition of the mixture and addition of 1% CaO.

From the authors' summary

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

29427
S/081/61/000/017/079/166
B101/B102

15 2630

AUTHORS: Kaynarskiy, I. S., Degtyareva, E. V.

TITLE: Thermal stability of refractories

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 335, abstract 17K207 (Sb. nauchn. tr. Ukr. n.-i. in-t ogneuporov, no. 4, 1960, 5-17)

TEXT: It was experimentally proved that the thermal stability of Dinas carborundum, magnesite-chromite, and magnesite spinel refractories is a regular, quantitative, reciprocal function of their thermal conductivity. The microfissure structure is of decisive importance for ensuring thermal stability. It can be attained by employing various industrial processes, e.g., by using two-phase or multi-phase mixtures. [Abstracter's note: Complete translation.]

Card 1/1

L 36872-66 EWP(e)/EWT(m)/EWP(t)/ETI IJP(c) JD/WH

ACC NR: AP6019872 (A) SOURCE CODE: UR/0131/66/000/002/0045/0051

AUTHOR: Kaynarskiy, I. S.; Degtyareva, E. V.; Orlova, I. G.; Karaulov, A. G.

ORG: Ukrainian Scientific Research Institute of Refractories (Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov)

TITLE: Effect of the method of vibratory milling of alumina on the properties of slips, sintering, and hardening of castings during firing, and properties of corundum articles

SOURCE: Ogneupory, no. 2, 1966, 45-51

TOPIC TAGS: alumina, corundum, sintering

ABSTRACT: The study involved technical-grade alumina G-00 prefired at 1550, 1650, and 1750°C, then ground in a vibratory mill with steel balls for 2-10 hr by the dry and wet methods until about 80% of the grains were less than 3μ in size. The milling lasted from 2 to 10 hr. The use of the wet method of vibratory milling for the preparation of corundum ceramics was found to increase the zeta potential, viscosity, and kinetic stability of the slip. The strength of dried castings obtained by the wet method is much higher than that of castings obtained by the dry method. Wet vibratory milling causes a substantial hydration of the grain surface, and subsequent dehydration during heating causes a decrease in the strength of the heated casting; this decrease is much greater than that of a dry-milled casting. Wet-milled castings

Card 1/2 UDC: 666.76:552.65

L 36872-66
ACC NR: AP6019872

undergo a substantially greater shrinkage and deformation under their own weight than do dry-milled ones. The anisotropy of shrinking of the latter is much lower. The use of dry vibratory milling insures the formation of a sintered body of higher density and a smaller size of corundum crystals. The mechanical and dielectric properties of corundum ceramics are much higher in articles prepared by dry vibratory milling as compared to wet-milled articles. Orig. art. has: 8 figures and 6 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 018/ OTH REF: 002

Card 2/2 mlp

S/081/62/000/010/063/085
B168/B180

AUTHORS: Degtyareva, E. V., Kukhtenko, V. A., Kaynarskiy, I. S.

TITLE: On the recrystallization of silicon carbide in manufactured articles fired at high temperature under reducing conditions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1962, 415, abstract 10K214 (Sb. nauchn. tr. Ukr. n.-i. in-t ogneuporov, no. 5(52), 1961, 92 - 107)

TEXT: It was established that high-temperature firing under reducing conditions brings about a slight decrease in the volume of a body together with a substantial increase in its porosity, which in recrystallized carborundum articles is extremely high; this is due to evaporation of SiC. The optimum conditions for the manufacture of recrystallized carborundum articles were found to be as follows: granular composition (in %) 0.9 - 0.7 mm 50 - 60, 0.3 - 0.2 mm 0 - 10, < 0.06 mm 40; compacting pressure 500 kg/cm^2; recrystallization temperature 2170 - 2200°C; soaking $\geq$ 1 hr. Under optimum conditions recrystallized articles were obtained with a porosity of 23 - 25% and with the addition of 20 - 22% boron

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S/081/62/000/010/063/085
B168/B180

On the recrystallization of...

they showed high resistance to oxidation. [Abstracter's note: Complete translation.]

Card 2/2

KAYNARSKIY, I.S.; DEGTYAREVA, E.V.

Carborundum refractory materials for furnaces which reduce iron slag and convert natural gas. Ogneupory 26 no.7:322-328 '61. (MIRA 14:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Silicon carbide)
(Furnaces, Heat treating)

KAYNARSKIY, I.S.; DEGTYAREVA, E.V.; KUKHTENKO, V.A.

Technology of a dust-free, granulated, moisture-absorbing dinas mortar. Ogneupory 27 no.2:53-59 '62. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Fireclay) (Mortar)

S/080/63/036/001/025/026
D204/D307

AUTHORS: Kaynarskiy, I.S. and Degtyareva, E.V.

TITLE: Mineralizers for reactions between solid phases

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 1, 1963, 225 - 227

TEXT: Synthesis of compounds from solid phases should be accelerated by compounds giving a melt containing a cation common to a reactant; suitable compounds are e.g. inorganic salts which possess a m.p. lower than the reaction temperature. This was tested on reactions of the formation of $MgCr_2O_4$, $MgAl_2O_4$, and $CaAl_2O_4$ form the oxides, using $MgCl_2$ and MgF_2 for the first 2 reactions and $CaCl_2$ for the 3rd. NaCl was also added in each case. $MgCl_2$ additions increased the yield of $MgAl_2O_4$ (at 1000°C), from 55.5 to 75.4 % after 6 hrs; a less pronounced effect (yield 70 %) was observed with MgF_2. No such effects were observed with NaCl. Corresponding effects were observed with $MgCr_2O_4$, although the

increases in yields were less pronounced since the reaction proceeded more intensely. In this case NaCl may even retard the reaction. In the case of $CaAl_2O_4$, the addition of $CaCl_2$ raised the yield from 80 to 100 % (6 hrs to 1000°C + 5 hrs at that temperature), whilst NaCl raised it to 94.5 %. Additions possessing a m.p. lower than reaction temperature and a cation common to one of the reactants thus facilitate the process, particularly at lower temperatures, whilst salts not possessing a common cation may also be effective if they form equilibrium melts (during the synthesis) which contain a cation common to one reactant. High m.p. additives may also be effective if they form an equilibrium melt as above at the reaction temperature. There are 3 tables.

SUBMITTED: February 1, 1962

DEGTYAREVA, E.V.

Use of phsophate binders in refractories. Sbor.nauch.trud. UNIIO no.5:290-298 '61. (MIRA 15:12)
(Refractory materials) (Chemical bonds)

S/893/61/000/005/001/005
B117/B186

AUTHOR: Degtyareva, E. V.

TITLE: Carborundum shieldings for thermocouples with increased resistance to oxidation

SOURCE: Kharkov. Ukrayins'kyi naukovodoslidchyi instytut vohnetryviv. Sbornik nauchnykh trudov, no. 5(52), 1961, 108-112

TEXT: Carborundum shieldings for thermocouples as well as carborundum windows were produced from five masses of differing composition. They were tested on shaft furnaces and continuous calcining furnaces of the slab mill and the thin sheet rolling mills "Zaporozhstal'" plant as well as on the blooming of the rail-beam mill train of the metallurgicheskiy zavod im. Dzerzhinskogo (Metallurgical Plant imeni Dzerzhinskiy). The method suggested (I.S. Kaynarskiy, E.V. Degtyareva, Ogneupory, 1960, no. 2, p.77) for increasing the resistance of these products against oxidation was confirmed. It has been shown that when very finely ground fractions are used, the impermeability to gas and the sensitivity to

oxidation of the carborundum mass can be strongly reduced at relatively high temperatures (above 1450°C). The properties mentioned are favorably influenced also by introducing 10% of FeSi and 3% of $Ba(OH)_2$ where the latter can be replaced by an equivalent amount of $BaSO_4$. These admixtures also increase the strength of the products. To produce carborundum shieldings for thermocouples and carborundum inspection glasses able to be used at temperatures above 1350 - 1400°C, the following composition of the carborundum mass is recommended: 60-70% of the fraction below 0.088 mm and BaO addition of 2.7%. There are 4 tables.

L 15687-63 EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4 JD/HW

ACCESSION NR: AR3003592 S/0081/63/000/008/0495/0495

SOURCE: RZh. Khimiya, Abs. 8M42

63
62

AUTHOR: Kaynarskiy, I. S., Degtyareva, E. V.

TITLE: Recrystalliztion of silicon carbide at high temperatures

CITED SOURCE: Tr. 6-go Soveshchaniya po eksperim. i tekhn. mineralogii i petrogr., 1961. M., AN SSSR, 1962, 266-270

TOPIC TAGS: SiC, recrystallization, silicon carbide

TRANSLATION: In high-temperature heating under reducing conditions in extrusions from silicon carbide, a series of processes takes place: loss of weight as a result of evaporation and, possibly, partial decomposition of SiC; increase of porosity of the body as a result of a loss of SiC; a decrease of volume of the extrusions, occurring as a consequence of some caking upon recrystallization; and recrystallization of SiC. The result of these processes is the formation of a body with porosity somewhat higher than the porosity of the initial extrusion, but with the simultaneous acquisition by the body of sufficient strength

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L 15687-63

ACCESSION NR: AR3003592

It was determined that an excessive increase in the temperature of the reducing heating of carborundum bodies during recrystallization is unsuitable, since it leads to considerably increased porosity. For lowering porosity in recrystallization roasting, neither the use of various charges nor the increase of the pressure of extrusion above 500 kg/sq cm was successful. G. Gerashchenko

DATE ACQ: 12Jun63 14 SUB CODE: CH,ML ENCL: 00

Card 2/2

S/131/63/000/003/003/003
B101/B186

AUTHORS: Degtyareva, E. V., Kukhtenko, V. A.

TITLE: Experience in using a vibration mill for determining the wearability of refractories

PERIODICAL: Ogneupory, no. 3, 1963, 138-140

TEXT: It is suggested to determine the wearability of refractories by a 1-hr treatment in a vibration mill (3,000 vibrations per minute) filled with quartz sand. The specimens were cylinders of 36 mm diameter and 50 mm height, or cubes of 50 mm edge length. The wearability was expressed by the loss in weight as a percentage of the initial weight, or by the grams loss in weight per cm^2 surface. Maximum deviations of measurement were ±3% for magnesite and carborundum refractories. The wearability increased with increasing porosity of the specimen. 0.201 g/cm^2 was found for magnesite refractory material of 20% porosity, and 0.065 g/cm^2 for carborundum material of 23% porosity. The wearability in g/cm^2 was independent of the specimen shape. Advantages over the known method of testing the wearability in a rotating drum: the specimen's edges do not

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break by knocking against each other, the results are therefore better reproducible, and the wearability depends linearly on the duration of the test. The use of other abrasives instead of quartz sand showed that the wearability depended on the hardness of the abrasive, but a hardness of more than 9 Mohs degrees showed little influence. Further experiments are required to find all possibilities and advantages of the method proposed. There are 4 figures and 1 table.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractory Materials)

DEGTYAREVA, ELEONORA VLADIMIROVNA

PHASE I BOOK EXPLOITATION SOV/6379

Kaynarskiy, Il'ya Semenovich, and Eleonora Vladimirovna Degtyareva

Karborundovyye ogneupory; svoystva karbida kremniya, tekhnologiya, svoystva i primeneniye karborundovykh ogneuporov (Carborundum Refractories; Properties of Silicon Carbide, Technology, Properties and Application of Carborundum Refractories) Khar'kov, Metallurgizdat, 1963. 251 p. 3050 copies printed.

Ed. of Publishing House: Ye. K. Sinyavskaya; Tech. Ed.: G. P. Obukhovskaya.

PURPOSE: This book is intended for engineers and technicians working in the refractory, metallurgical, ceramic, and chemical industries, and for scientists and students interested in silicates.

COVERAGE: The book, representing a review of the field and based primarily on periodical literature, gives a systematic presentation of information on the physicochemical properties of carborundum, the technology of carborundum production, the

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manufacture of carborundum refractories with ceramic binders, various types of refractories containing carborundum, and specialized carborundum products (recrystallized, hot-pressed, self-binding) with silicon nitride binder and other binders. Industrial applications of carborundum refractories are also given. There are 397 references: 170 of them Soviet.

TABLE OF CONTENTS [Abridged]:

L 16997-63 EWP(q)/EWT(m)/BDS AFFTC/ASD WH/JD
S/028/63/000/004/002/002

58

AUTHOR: Degtyareva, E. V.

TITLE: Refractory products

PERIODICAL: Standartizatsiya, no. 4, 1963, 46

TEXT: The All-Union State Standard, GOST 10153-62 for highly refractory carborundum wares was promulgated effective July 1, 1963. The new standard replaces four temporary specifications which covered two classes of wares each. The new standard significantly reduces the number of types and classes of refractory products.

The classification of wares in GOST 10153-62 is based on the content of aluminum oxide, and this permits a sharply defined differentiation of properties and application of the refractories. This standard covers three types of highly refractory carborundum products: KK, KA-3, and KA-5 having maximum contents of aluminum oxides of 1.5%, 3.5% and 5%, respectively. The new standard specifies an increased content of silicon carbide and a higher temperature of initiation of deformation under load, which is particularly important for refractory products under sustained load.

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DEGTYAREVA, E.V.

Refractory articles. Standartizatsiia 27 no.4:46 Ap '63.
(MIRA 16:4)
(Silicon carbide—Standards)

KAYNARSKIY, Il'ya Semenovich; DEGTYAREVA, Eleonora Vladimirovna; SINYAVSKAYA, Ye.K., red.izd-va; OBUKHOVSKAYA, G.P., tekhn. red.

[Carborundum refractories; properties of silicon carbide, the technology, properties, and use of carborundum refractories] Karborudovye ogneupory; svoistva karbida kremnia, tekhnologiia, svoistva i primenenie karborundovykh ogneuporov. Khar'kov, Metallurgizdat, 1963. 251 p. (MIRA 16:4)
(Silicon carbide) (Refractory materials)

DEGTYAREVA, E.V.; PINDRIK, B.Ye.

Refractory articles. Standartizatsiia 27 no.2:43 F '63.
(MIRA 16:4)
(Refractory materials—Standards)

DEGTYAREVA, E.V.; KUKHTENKO, V.A.

Use of vibration mills for the abrasion testing of refractories. Ogneupory 28 no.3:138-140 '63. (MIRA 16:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuprov.
(Refractory materials—Testing) (Abrasion—Testing)

KAYNARSKIY, I.S.; DEGTYAREVA, E.V.; YELTYSHEVA, A.A.

Unfired dinas bricks. Ogneupory 28 no.7:303-305 '63.
(MIRA 16:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.

KAYNARSKIY, I.S.; DEGTYAREVA, E.V.

Mineralizers of reactions between solid phases. Zhur.prikl.khim. 36 no.1:225-227 Ja '63. (MIRA 16:5)
(Fused salts) (Phase rule and equilibrium)

L 8654-65 EWG(j)/EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EPR/EPA(w)-2/EWP(b)
Pab-24/Pr-4/Ps-4/Pt-10/Pu-4 JD/WH

ACCESSION NR: AP4045414 S/0131/64/000/009/0400/0411

B

AUTHOR: Degtyareva, E.V., Kaynarskiy, I.S., Totsenko, S.B.

TITLE: Sintering of corundum with additives

SOURCE: Ogneupory*, no. 9, 1964, 400-411

TOPIC TAGS: corundum, corundum sintering, corundum sintering additive, corundum shrinkage, corundum porosity, magnesium titanate, zirconium titanate, aluminum titanate

ABSTRACT: The sintering of crystalline powders in the absence of a liquid phase is influenced by many factors, the most important being an increase in the defects in the crystal lattice, which increases the rate of diffusion. Diffusion is also increased by such additions as TiO_2, Mg titanate, MgF_2 and others. Previous investigations have estimated the porosity of the final product without considering the entire process. The present authors therefore studied the effect of additions on the process of shrinkage of sintered samples, using a dilatometer with an accuracy of 0.005 mm. The samples were heated to 1500C, and some samples were tested at even higher temperatures. The sintering process was continued for 6 hours, and in some cases the temperature was increased in 100C stages. Alumina samples, 8 mm in diamteter and 20 mm high,

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L 8654-65

ACCESSION NR: AP4045414

were first heated to 1550C, then pulverized in a vibration mill followed by washing with hydrochloric acid and distilled water. The effect of $2MgO.TiO_2$, $MgO.TiO_2$, $MgO.2TiO_2$ $Al_2O_3.TiO_2$ and $ZrO_2.TiO_2$ as additions to alumina was then investigated. Fig. 1 of the Enclosure shows the effect of the introduction of magnesium titanate on alumina shrinkage during sintering, while Fig. 2 shows the effect of zirconium and aluminum titanates. Lowering of porosity in relation to the quantity of magnesium titanate added is shown in Fig. 3. of the Enclosure. Other figures in the paper illustrate the effect of various additives under various conditions. The paper also considers the effect of magnesium compounds on the sintering process. Figures 4 & 5 of the Enclosure show the shrinkage of alumina samples with and without magnesium oxide. On the basis of an analysis of the test results, it was concluded that addition of magnesium, zirconium and aluminum titanates, as well as titanium dioxide, improves corundum sintering in proportion to the quantity of titanium dioxide added. The addition of silicates containing magnesium improves the degree of corundum sintering in proportion to the quantity of silica introduced. However, the introduction of pure silica lowers the degree of corundum sintering. The addition of magnesium spinel, as well as magnesium oxide, somewhat retards sintering up to 1400C, while at 1500C and over it increases the degree

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ACCESSION NR: AP4045414

of corundum sintering compared with alumina samples without additions. Shrinkage during corundum sintering proceeds according to the equation: $\Delta L/L = kt^n$, where ΔL and L show the shrinkage and t is the time. Empirical factors have been determined for this equation depending on the amount of additive. Orig. art. has: 20 figures and 8 tables.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute for Refractory Materials)

SUBMITTED: 00 ENCL: 05 SUB CODE: MM, MT

NO REF SOV: 015 OTHER: 004

Card 3/8

L 8654-65

ACCESSION NR: AP4045414

ENCLOSURE: 01

Fig. 1. Total shrinkage ($\Delta L/L$) of alumina samples when magnesium titanate is added, depending on the quantity of TiO_2, introduced at: 1 - 1500C; 2 - 1400C; 3 - 1300C; 4 - 1200C.

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Fig. 2. Total shrinkage ($\Delta L/L$) of alumina samples when zirconium and aluminum titanates (o) and titanium dioxide (□) are added, depending on the quantity of TiO_2 introduced at: 1 - 1500C; 2 - 1400C; 3 - 1300C; 4 - 1200C.

L 8654-65
ACCESSION NR: AP4045414

ENCLOSURE: 03

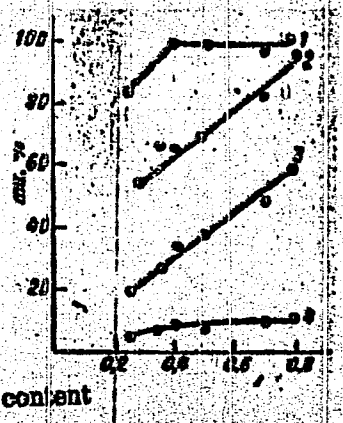

Fig. 3. Lowering of open porosity of alumina samples when magnesium titanate is added, depending on the quantity of TiO_2 introduced, after sintering at: 1 - 1500C; 2 - 1400C; 3 - 1300C; 4 - 1200C.

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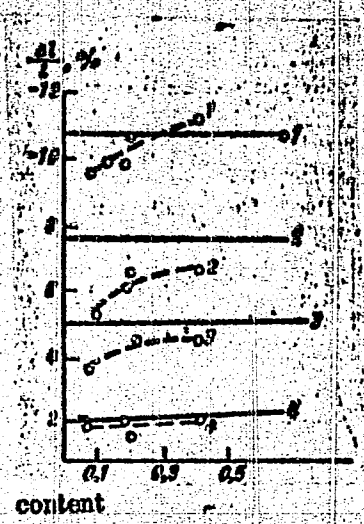

Fig. 4. Total shrinkage ($\Delta L/L$) of alumina samples without additions (solid lines) and with magnesium oxide (dashed line), depending on the quantity added, after sintering at: 1 - 1600C; 2 - 1400C; 3 - 1300C; 4 - 1200C.

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L 8654-65

ACCESSION NR: AP4045414

ENCLOSURE: 05

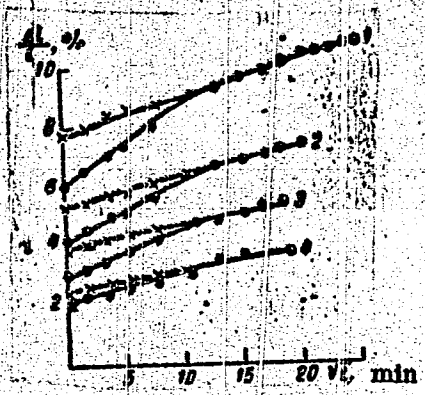

Fig. 5. Kinetics of alumina sample shrinkage during sintering: a - without additions; b - with 0.11% MgO; ● - ● - with direct heating of samples; x - x - with heating of samples by stages; sintering at: 1 - 1500C; 2 - 1400C; 3 - 1300C; 4 - 1200C.

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KAYNARSKIY, I.S.; DEGTYAREVA, E.V.; PINDRIK, B. Ye.; KUKHTENKO, V.A.; KULAKOV, N.I.; BEL'CHENKO, B.I.; IVNITSKAYA, N.S.; SMORODA, I.M.; SHAROV, M.F.; KOZIN, L.M.; KVASHA, A.S.; PELESHCHUK, M.I.; PRYAKHIN, L.G.; LEVINA, L.I.; DANILOV, V.I.; DIDENKO, S.Yu. PROTSENKO, G.A.

Reducing dust formation from dinas bricks and dinas mortar. Ogneupory 29 no.3:109-112 '64. (MIRA 17:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Kaynarskiy, Degtyareva, Pindrik, Kukhtenko). 2. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy koksokhimicheskoy promyshlennosti (for Kulakov, Bel'chenko, Ivnitskaya). 3. Vsesoyuznyy trest po stroitel'stvu i montazhu koksokhimicheskikh zavodov (for Peleshchuk, Pryakhin, Levina). 4. Ukrainskiy nauchno-issledovatel'skiy institut gigiyeny truda i professional'nykh zabolevaniy (for Danilov, Didenko, Protsenko).

L 10667-65 EPA(s)-2/EWT(m)/EWP(e)/EPF(c)/EPF(n)-2/EPR/EPA(w)-2/EPA(bb)-2/EWP(b) Pab-24/Pr-4/Ps-4/Pt-10/Pu-4 ASD(m)-3/AS(mp)-2/ASD(a)-5/AFETR/ESD(t) WW/WH

ACCESSION NR: AP4041161 S/0020/64/156/004/0937/0940

AUTHOR: Degtyareva, E. V.; Kaynarskiy, I. S.

TITLE: Kinetics of corundum sintering

SOURCE: AN SSSR, Doklady*, v. 156, no. 4, 1964, 937-940

TOPIC TAGS: corundum, sintering, kinetics, shrinkage, diffusion sintering, corundum preparation, titanate additive, titanium dioxide, activation energy, magnesium containing silicate additive

ABSTRACT: A systematic study was made of the sintering of corundum, with and without additives, cast from dross and subject to different heating. The kinetics study was based on the measurement of shrinkage of corundum samples heated directly to a given temperature and isothermally aged, or heated gradually at 100 degree stages to temperatures of 1200-1700°. Complete shrinkage with both methods on heating is determined by the proportionality $\Delta l/l \sim \sqrt{t}$. However the shrinkage of samples on isothermal heating proceeds at two rates: for the first 2 hours at a faster rate, and after that at a rate corresponding to that attained by gradual heating. The shrinkage on gradual heating is constant. The rate of sintering at

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L 10667-65

ACCESSION NR: AP4041161

a given temperature on direct heating is faster during the first 2 hours than subsequently, and at higher temperatures this difference in sintering rate is magnified. Without additives, 70-75% shrinkage is not attained even at 1400-1500C. The energy of activation is 70-120 kcal, the lower values corresponding to the lower temperatures used in the preliminary calcining of clay. Incorporation of Mg, Al or Zr titanates or TiO_2 lowers the energy of activation from 118 to 58-87; a magnesium-containing silicate lowers it to 46-65. The kinetics of diffusion sintering of corundum are similar to those of metal powders. The energy of activation varies depending on the method of corundum preparation and composition and amount of additives. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractory Materials)

SUBMITTED: 07Feb64 ENCL: 00

SUB CODE: MT NO REF SOV: 002 OTHER: 007

Card 2/2

L 8648-65 EWP(e)/EPA(a)-2/EWT(m)/EPF(n)-2/EIA(w)-2/EWP(b) Pab-24/Pt-10/
Pu-4 WH

ACCESSION NR: AP4042025 S/0020/64/157/001/0168/0170

AUTHOR: Kaynarskiy, I. S.; Degtyareva, E. V.; Orlova, I. G.;

TITLE: Correlation of dielectric and mechanical strength of corundum ceramics

SOURCE: AN SSSR. Doklady, v. 157, no. 1, 1964, 168-170

TOPIC TAGS: corundum, alpha alumina, corundum ceramic, gamma alumina additive, titanate additive, titania additive, magnesia additive, forsterite additive, ceramic microstructure, breakdown voltage, bending strength

ABSTRACT: Wide discrepancies in literature data on the mechanical and dielectric properties of corundum ceramics prompted an investigation of the bending strength and breakdown voltage of such ceramics having different microstructures, with and without additives. The difference in microstructure of the body, measured by the average size of a crystal, was achieved by varying its annealing temperature and the degree of alumina dispersion, the latter expressed as the percentage of the size fraction below 3μ. Both bending strength and breakdown voltage

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L 8643-65

ACCESSION NR: AP4042025

reach a maximum value with the same average size (0.02—0.03 mm^2) of the α-alumina crystals in ceramics without additives and with small additions of γ-alumina, magnesium, aluminum, or zirconium titanates or titanium dioxide. However, the absolute values of the characteristics are higher for ceramics with titanate additive than for those without additives. Magnesium-containing additives (magnesia or forsterite) significantly decrease the average size of a crystal, to a minimum of 0.0001—0.0002 mm^2. An increase in the average crystal size to 0.001 mm^2 leads to a sharp drop in the breakdown voltage but to an insignificant decrease in bending strength. The data for various types of corundum ceramics confirm a correlation of the voltage breakdown and bending strength with microstructure. The correlation between these characteristics is shown to be almost linear. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractories)

SUBMITTED: 02Feb64 ATD PRESS: 3111 ENCL: 00

SUB CODE: MT NO REF SOV: 009 OTHER: 000

Card 2/2

L 27305-65 EWP(e)/EWT(m)/EPA(s)-2/EPF(c)/EPF(n)-2/T/EPA(w)-2/EPR/EPA(bb)-2/
EWP(b) Pab-10/Pr-4/Ps-4/Pt-10/Pu-4 WW/WH

ACCESSION NR: AP4047019 S/0131/64/000/010/0455/0460

AUTHOR: Kaynarskiy, I. S., Degtyareva, E. V.; Alekseyenko, L. S.

TITLE: Shrinkage anisotropy of sintered corundum

SOURCE: Ogneupory*, no. 10, 1964, 455-460

TOPIC TAGS: sintering, shrinkage anisotropy, corundum, sintered corundum, dry grinding, wet grinding, cast alumina

ABSTRACT: Cast cylindrical and cube-shaped samples of dry and wet-ground alumina slips were sintered in dilatometers at 1200-1750C in order to investigate longitudinal, diametrical and three-dimensional shrinkage as factors in the anisotropic shrinkage of cast alumina products during sintering. Sintering of cast samples prepared from dry-ground alumina burned at 1450 and 1550C was found to produce no noticeable shrinkage anisotropy. In contrast, identical samples with alumina burned at 1650 and 1750C showed significant shrinkage anisotropy even for relatively low sintering temperatures. Shrinkage anisotropy rises markedly in wet-ground alumina samples, especially at higher sintering temperatures, climbing from 3% in dry-ground samples to 8.4% in wet-ground samples at 1500C. From structural studies

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L 27305-65
ACCESSION NR: AP4047019

of the corundum kernels of the samples, conclusions are drawn to the effect that a) the shrinkage anisotropy as observed in these sintered alumina slip samples is due to the oriented corundum kernel arrangement in cast products when the kernels are of nonisometric form, b) the amount of sintering shrinkage is a direct function of the temperature of alumina burning and kernel size, c) half dry-ground fine corundum powders without significant crystal orientation in the structure yield sintered products without shrinkage anisotropy, and d) step-heating of cast samples ensures a nearly uniform sintering shrinkage. Orig. art. has: 3 tables and 7 figures.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian refractory materials scientific research institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: MT

NO REF SOV: 004 OTHER: 008

Card 2/2

DEGTYAREVA, E.V.; KAYNARSKIY, I.S.; [illegible]

Sintering of corundum with additives. Ogneupory 29 no.[illegible] 1964.
(MIRA 17:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.

L 63822-65

ACCESSION NR: AP5009380 S/0363/65/001/002/0281/0284

AUTHOR: Degtyareva, E. V.

TITLE: Kinetics of removing intragranular pores on sintering alumina and preparation of transparent corundum ceramics

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 2, 1965, 281-284

TOPIC TAGS: refractory ceramic, alumina ceramic, corundum ceramic, pore free ceramic, transparent ceramic

ABSTRACT: The kinetics of sintering porous corundum ceramic products at temperatures above 1500C have been studied to determine the mechanism and conditions for removing intragranular pores and for preparing transparent polycrystalline corundum ceramics. Sintering to 1500C removes only intergranular (open) pores by a diffusion mechanism, leaving behind a multitude of minute pores inside the large corundum crystals. Slip-cast corundum samples were fired with or without modifiers (magnesium, aluminum, or zirconium titanates, magnesium or titanium oxides). The decrease in intragranular poros-

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ACCESSION NR: AP5009380

ity $\Delta\Pi$ was evaluated from measurements of the weight by volume and specific gravity of the samples. The kinetics of sintering were determined by the relation $\Delta\Pi/\Pi \sim t^{1/3}$, independent of the presence or nature of the modifier. The same relation was established for the increase in width of the pore-free "skin" of a corundum crystal heated at a given temperature for a period of time. Further, an increase in the growth rate of a crystal was found to cause a sharp decrease in the rate of $\Delta\Pi$, so that an extremely long time is required to remove all intragranular pores. Therefore, the growth of crystals should be considerably retarded, if a completely sintered pore-free product is desired. This retardation was achieved by adding magnesium oxide and firing the products first at 1600—1700C in hydrogen, then at 1800—1900C in a vacuum. The corundum ceramic products obtained were polycrystalline with a maximum transparency of 82—86% at a wavelength of 4.7 μ for a thickness of 0.5 mm. The products were pore-free. Infrared transparency was sharply reduced by increasing the magnesium oxide content from 0.1 to 0.4%. Impurities such as Fe, Ni, Co, Mn, Cr, and SiO_2 reduce transparency to zero. Not less than 99.7% pure Al_2O_3 is a requirement for transparent corundum ceramics. Orig. art. has: 6 figures. [JK]

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L 63822-65
ACCESSION NR: AP5009380

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (Ukrainian Scientific Research Institute of Refractory Materials)

SUBMITTED: 30Oct64 ENCL: 00 SUB CODE: MT

NO REF SOV: 012 OTHER: 005 ATD PRESS: 3219

Card 3/3 MC

L 59370-65 EWT(1)/EWP(e)/EPA(s)-2/EWT(m)/EWP(t)/EPA(w)-2/EEC(t)/T/EWP(b)
Pab-10/Pt-7/Pl-4 IJP(c) GG/WH

ACCESSION NR: AP5016600 UR/0363/65/001/005/0810/0815
666.3:621.317.335

AUTHOR: Kaynarskiy, I. S.; Degtyareva, E. V.; Alekseyenko, L. S.

TITLE: Effect of modifiers on the dielectric properties of corundum ceramics

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 5, 1965, 810-815

TOPIC TAGS: ceramic modifier, ceramic dielectric property, corundum ceramic, titanate modifier, oxide modifier, silicate modifier, magnesia spinel

ABSTRACT: The effect of small amounts (0.25-1%) of modifiers (magnesium, zirconium and aluminum titanates; titanium and zirconium oxide; various magnesium-containing silicates, and magnesium oxide) on the density and dielectric properties of corundum ceramics was studied. The samples were prepared by slip casting in gypsum plaster molds and firing for 6 hr. at 1750C. Only the addition of 0.5% $MgO \cdot TiO_2$ was found to have a positive effect on the dielectric properties; zirconium dioxide does not change the latter, and titanium oxide impairs them. The effect of magnesium-containing silicates on the dielectric properties of corundum ceramics is the sum of the effects produced

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L 59370-65
ACCESSION NR: AP5016600

by magnesium oxide and silica. By forming a spinel with corundum, magnesium oxide sharply decreases the size of the corundum crystals, causing improved dielectric properties of the corundum ceramic. The separating silica forms a vitreous substance with corundum and decreases the density of the ceramic, causing a marked increase in dielectric loss in proportion to the increase in the silica content. Orig. art. has: 7 figures and 3 tables.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov, Khar'kov (Ukrainian Scientific Research Institute of Refractories)

SUBMITTED: 30Oct64 ENCL: 00 SUB CODE: MT

NO REF SOV: 011 OTHER: 001

Card 2/2 dap

L 59369-65 EWT(1)/EWP(e)/EPA(s)-2/EWT(m)/EWP(1)/EPA(w)-2/EEC(t)/T/EWP(b)
Pab-10/Pt-7/Pl-4 IJP(c) GG/WH

ACCESSION NR: AP5016601 UR/0363/65/001/005/0816/0822
666.3:539.24

47
46
B

AUTHOR: Degtyareva, E. V.; Kaynarskiy, I. S.; Karyakin, L. I.; Alekseyenko, L. S.

TITLE: Dielectric properties of corundum ceramics and their microstructure

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 5, 1965, 816-822

TOPIC TAGS: corundum ceramic, ceramic additive, ceramic structure, ceramic dielectric property, titanate modifier, corundum grain size, silicate modifier

ABSTRACT: Corundum ceramics were prepared from alumina preheated at 1450-1750C. Raising the temperature of this pretreatment and decreasing its dispersity reduces the size of the crystals making up the corundum ceramic; wet milling of the preheated alumina causes an enlargement of the corundum crystals in the ceramic. The samples were made by slip casting the preheated alumina in gypsum plaster molds and firing for 6 hr. at 1750C. A rise in the α-Al_2O_3 content considerably increased the crystal size, whereas γ-Al_2O_3 reduces it. Addition of magnesium, aluminum and zirconium titanates decreases the size of corundum

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L 59369-65
ACCESSION NR: AP5016601

crystals. However, this effect is weaker the larger the amount of TiO_2 introduced with the modifier. The introduction of various magnesium-containing modifiers (without TiO_2), including magnesium silicates, substantially reduces the crystal size of the corundum ceramic and provides for a uniform grain size. The microstructure and composition of the additives determine the dielectric properties of the ceramics to a considerable extent. The breakdown voltage of the ceramics with or without various titanates, titanium dioxide, and zirconium dioxide reaches its maximum value at a mean cross section of the crystals of 0.002-0.04-mm^2; the tangent of the dielectric loss angle then has minimum values. When magnesium-containing additives (besides magnesium titanates) are introduced, the breakdown voltage rises steadily with decreasing crystal size, and increases particularly when the structure is very finely crystalline. Orig. art. has: 9 figures and 4 tables.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov, Khar'kov (Ukrainian Scientific Research Institute of Refractories)

SUBMITTED: 30Oct64 ENCL: 00 SUB CODE: MT

NO REF SOV: 010 OTHER: 001

Card 2/2 blp

L 65213-65 EWP(e)/EPA(s)-2/EWT(m)/EWP(l)/EPA(w)-2/EWP(t) WH

ACCESSION NR: AP5013254 UR/0226/65/000/005/0082/0086

AUTHOR: Kaynarskiy, I. S.; Orlova, I. G.; Degtyareva, E. V.

TITLE: Deformation and shrinkage of corundum during sintering

SOURCE: Poroshkovaya metallurgiya, no. 5, 1965, 82-86

TOPIC TAGS: corundum shrinkage, corundum deformation, corundum sintering

ABSTRACT: The authors consider the kinetic deformation and shrinkage curves during sintering (at temperatures of 1200-1500°C) of aluminum based corundum samples with introduced additives. A nonlinear interrelation was established between the deformation and the shrinkage in the case of considerable sintering. It is shown that nonlinearity is due to the development of a stream with a constant rate. At the same time a preliminary thermal treatment of the samples with subsequent heating at a temperature 100°C higher decreases and eliminates development of a stream with a constant rate. As a result the interrelation of the deformation and shrinkage of the samples under conditions of such sintering becomes linear in the course of the entire period of sintering. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov, g. Khar'kov (Ukrainian Scientific Research Institute for Refractory Materials)

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L 65213-65

ACCESSION NR: AP5013254

SUBMITTED: 20Jan64 ENCL: 00 SUB CODE: MT, MM

NO REF SOV: 014 OTHER: 006

Card 2/2

KAYNARSKIY, I. S.; PRIKINA, L.G.; DEGTYAREVA, E.V.

Interrelation between setting and deformation in corundum sintering.
Dokl. AN SSSR 164 no.6:1283-1285 O '65.
(MIRA 18:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
Submitted February 27, 1965.

KAYNARSKIY, I.S.; DEGTYAREVA, E.V.; PINDRIK, M.Ye.; SAKOVSKIY, I.Ya.

Use of alumina - carborundum refractories in coke ovens.
Ogneupory 30 no.7:35-37 '65. (MIRA 18:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Kaynarskiy, Degtyareva, Pindrik). 2. Gosudarstvennaya inspektsiya po sluzhbe i kachestvu ogneuporov (for Sakovskiy).